

KAL'YANOV, T.A., inzhener; BREZHNEV, Ya.I., inzhener; RUDNITSKIY, L.S.,  
inzhener; KOTESHOV, N.P., inzhener; YEZERSKIY, B.B., inzhener;  
CHERKUN, N.A., inzhener; SUSLOVICH, Z.I., inzhener; ZABELIN, N.K.,  
inzhener.

Improving the quality of cast-iron rolls for shape rolling.  
Stal' 16 no.7:647-649 J1 '56. (MLRA 9:9)

1. Zavod imeni Dzerzhinskogo, Dnepropetrovskiy chugunoval'-  
tsedelatel'nyy zavod i Dnepropetrovskiy metallurgicheskiy  
institut.

(Rolls (Iron mills)--Quality control)

LINEVA, V.A.; BREZHNEVA, I.M.

Prospects for using repellents against flies. Med. paraz. i  
paraz. bol. 33 no.5:532-536 S-O '64. (MIRA 18:4)

1. Institut meditsinskoy parazitologii i tropicheskoy meditsiny  
imeni Martsinovskogo Ministerstva zdravookhraneniya SSSR i  
biologo-pochvennyy fakul'tet Moskovskogo gosudarstvennogo  
universiteta imeni Lomonosova, Moskva.

PHASE I BOOK EXPLOITATION

SOV/6392

Brezhneva, K. M., T. S. Masharova, I. F. Nikolayevskiy, D. I.  
Smetanina, S. V. Supov, T. I. Fishbeyn, and A. B. Khotimskiy

Tranzistory i poluprovodnikovyye diody (Transistor and Semiconductor  
Diodes) Moscow, Svyaz'izdat, 1963. 646 p. Errata slip inserted.  
40,000 copies printed.

Ed. (Title page): I. F. Nikolayevskiy; Ed.: L. I. Vengrenyuk;  
Tech. Ed.: K. G. Markoch.

PURPOSE: This handbook is intended for technicians and scientists  
concerned with the application of semiconductor devices. It  
may also be useful to students of radio engineering divisions  
in schools of higher education and to advanced radio amateurs.

COVERAGE: This is the second edition of the handbook and it differs  
from the first by giving more complete information, including data

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Transistor and Semiconductor Diodes

SOV/6392

concerning new transistors and diodes. It also introduces a new general chapter on transistors in which the physical meaning and significance of each parameter are explained in detail and lists the specific characteristics of the transistors commonly used in the USSR. No personalities are mentioned. There are no references.

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PART ONE. TRANSISTORS

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1. Principles of marking and classification	25

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PHASE I BOOK EXPLOITATION

SOV/5441

Brezhneva, K. M., I. B. Ivanova, T. S. Mosharova, I. F. Nikolayevskiy, A. S. Savina, D. I. Smetanina, S. V. Supov, and T. I. Fishbeyn.

Poluprovodnikovyye triody i diody; [spravochnik] (Semiconductor Triodes and Diodes; Handbook) Moscow, Svyaz'izdat, 1961. 311 p. 30,000 copies printed.

Ed. (Title page): I. F. Nikolayevskiy; Resp. Ed.: A. G. Muradyan; Ed.: A. I. Voronova; Tech. Ed.: K. G. Markoch.

PURPOSE: This book is intended for engineers, technicians, and persons engaged in designing, building, and operating radio electronics equipment employing diodes and triodes.

COVERAGE: The handbook provides data on the properties and operational characteristics of junction-type diodes and triodes developed in the Soviet Union and delivered to plants or adapted for mass production. Reference data are provided on low-power,

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## Semiconductor Triodes (Cont.)

SOV/5441

low-frequency (up to 0.2 w and up to 3 mc) fused germanium and silicon triodes; on low-power, low-frequency (up to 0.25 w and up to 400 mc), fused, diffusion, and surface-barrier (microfused) germanium triodes; on powerful (from 0.25 to 100 w) fused triodes made from germanium; and on junction-type silicon and germanium rectifier diodes and voltage stabilizers. Methods and formulas are given for deriving data, curves, and parameters not found in the handbook. Parameters and symbols and their definitions and formulas; heat constants; maximum permissible operating conditions; and electrical data for individual diodes and triodes are given. The paragraphs entitled "Principles of Marking and Classification" explain the technical implications of markings, e.g., "P13" and "P13A" designate germanium semiconductor triodes of different amplification coefficients ( $\alpha$  being 0.92 and 0.97 respectively), whereas triodes "P13A" and "P13B" do not differ in  $\alpha$ , but in noise level ( $F_n$  being 33 and 12 decibels respectively). The authors thank A. G. Maradyan for editorial assistance. There are no references.

Card 2/10

BREZHNEVA, K.M.; MASHAROVA, T.S.; NIKOLAYEVSKIY, I.F.; SMETANINA, D.I.;  
SUPOV, S.V.; FISHEYN, T.I.; KHOTIMSKIY, A.B.; VENGRENYUK, L.I.,  
red.; MARKOCH, K.G., tekhn. red.

[Transistors and semiconductor diodes]Tranzistory i poluprovod-  
nikovye diody. Moskva, Sviaz'izdat, 1963. 646 p. (MIRA 16:3)  
(Transistors) (Semiconductors)

BUDINSKIY, Yaroslav [Budinsky, Jaroslav]; MAL'TSER, Rafail Yefimovich  
[translator]; BREZHNEVA, K.M., red.; VEYTSMAN, G.I., red.;  
VENGRENYUK, L.I., red.; SHEFER, G.I., tekhn. red.

[Low-frequency transistor amplifiers] Usiliteli nizkoi cha-  
stoty na tranzistorakh. Izd.2., perer. Moskva, Mashgiz,  
1963. 319 p. Translated from the Czech. (MIRA 16:10)  
(Transistor amplifiers)



BREZHNEVA, N.M.

~~XXXXXXXXXXXXXXXXXXXX~~  
Comparative study of ether-valerian infusions obtained by maceration  
and percolation. Apt.delo 5 no.3:16-19 My-Je '56. (MLRA 9:8)

1. Iz kafedry tekhnologii lekarstvennykh form i galenovykh preparatov  
(zav.dotsent A.S.Pozorovskiy) Moskovskogo farmatsevticheskogo insti-  
tuta.

(VALERIAN) (CHROMATOGRAPHIC ANALYSIS)

BREZHNEVA, N.M.

Investigation of certain details in the process of extraction  
from the bark of cornberrybush viburnum and methods for the  
quantitative determination of tanning substances in extract.  
Apt.delo 7 no.3:23-26 My-Je '58 (MIRA 11:7)

1. Iz kafedry tekhnologii lekarstv i galenovykh preparatov  
(zav. - dotsent A.S. Prozorovskiy) Moskovskogo farmatsevticheskogo  
instituta Ministerstva zdravookhraneniya RSFSR.  
(VIBURNUM)  
(TANNING MATERIALS)

BREZHNEVA, N.M.

Study of some details in the process of extraction from Viburnum bark.  
Apt. delo 10 no.6:24-27 N-D '61. (MIRA 15:2)

1. I Moskovskiy ordena Lenina meditsinskiy institut imeni I.M.Sechenova.  
(CRANBERRY TREE) (EXTRACTS)

LIST AND GROUPS		PROCESSING AND PROPERTIES INDEX	
<p>CO</p>		<p>9</p>	
<p>Relationship of diffusion velocity to crystallographic orientation in metals (anisotropic diffusion). V. Bugakov and N. Buzhnevaya. <i>Tekh. Phys. U. S. S. R.</i> 2, 435-43 (1958) (in Russian). The diffusion velocities of Hg in Cd and Zn and of Cu in Zn in directions parallel and perpendicular to the base plane of single crystals were determined between 300° and 500°. Hg diffusion figures were obtained on the desired crystal face by placing a drop of Hg on the metal, wiping off the excess after an amalgam had formed, heating to the required temp., and grinding the surface. The base plane figures were circles; all other figures were ellipses with major axes parallel to the base plane. The diffusion velocity was the same in all directions in the base plane only. It was greatest in directions parallel and least in directions perpendicular to the base plane. Cu was electroplated upon the Zn crystals and heated at the required temp. in a vacuum for 8 days. Microsections perpendicular to the plated surface were cut and the diffusion layer was measured microscopically. The diffusion velocity in the direction parallel to the base plane was again greater than in the perpendicular direction. X-ray analysis showed the diffusion layer to be of the <math>\gamma</math>-phase. The differences between the diffusion velocities in the various directions decreased, for both Cu and Hg, with increase in temp. Iver Ireland</p>			
<p>ASB-55A METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>REGION: 55A</p>			
<p>CLASSIFICATION</p>			

3

Introduction of radioactive halides into organic molecules  
N. Buzhnevskii, S. Z. Roginskii and A. I. Shubin  
J. Org. Chem. 1959, 24, 1110  
USSR Acad. Sci. Div. Chem. Sci.

AND-SEA METALLURGICAL LITERATURE CLASSIFICATION

A method for the introduction of radioactive halides into organic molecules. N. B. Brezhnev, S. Z. Roginskii and A. I. Shilinskii. *J. Phys. Chem.* (U. S. S. R.), 6, 849 (5), (1952).—Radioactive Br prep'd. by neutron bombardment of KBr and etcd. with aq. KBr was introduced into a variety of org. and inorg. compds. by interaction with radioactivated AlBr<sub>3</sub>. Radioactive Br compds. prep'd. were ethyl, isomyl, phenyl, *o*-naphthyl and benzyl bromides, ethylene dibromide, bromoform, trimethylene bromide and *p*-dibromobenzene. For aliphatic compds. the exchange reaction is very rapid, as also for ionizing compds. even in the solid state. In polybromides, all the Br atoms take part in the exchange. For aromatic compds. at room temp. the exchange is only 20% complete after 1 hr. Benzyl bromide, like the aliphatic compds., exchanges almost immediately with an activation energy of not over 10 kcal. In a similar way radioactive Cl interchanges to vinyl radioactive org. halides. F. H. R.

CA

3

Catalytic transfer during isotopic interchange in bromine. N. B. Brezhneva, S. Z. Roginskii and A. Shul'skii. *Acta Physicochim. U. R. S. S. O.* 744-7 (1937) (in English).—See C. A. 31, 8340P. E. H.

ASAC A4 METALLURGICAL LITERATURE CLASSIFICATION

100000 #2 100000 HEP ONLY ONE 1000000 1000000 ONE ONLY 151

*Kinetics of the isotopic bromine exchange between aluminum bromide and ethyl bromide.* N. E. Byghovna, S. Z. Roginskii and A. I. Shilinski. *Achi Physicochim.* U. R. S. S. 7, 201-6(1937) (in German).—See C. A. 32, 4141.

M. W. B.





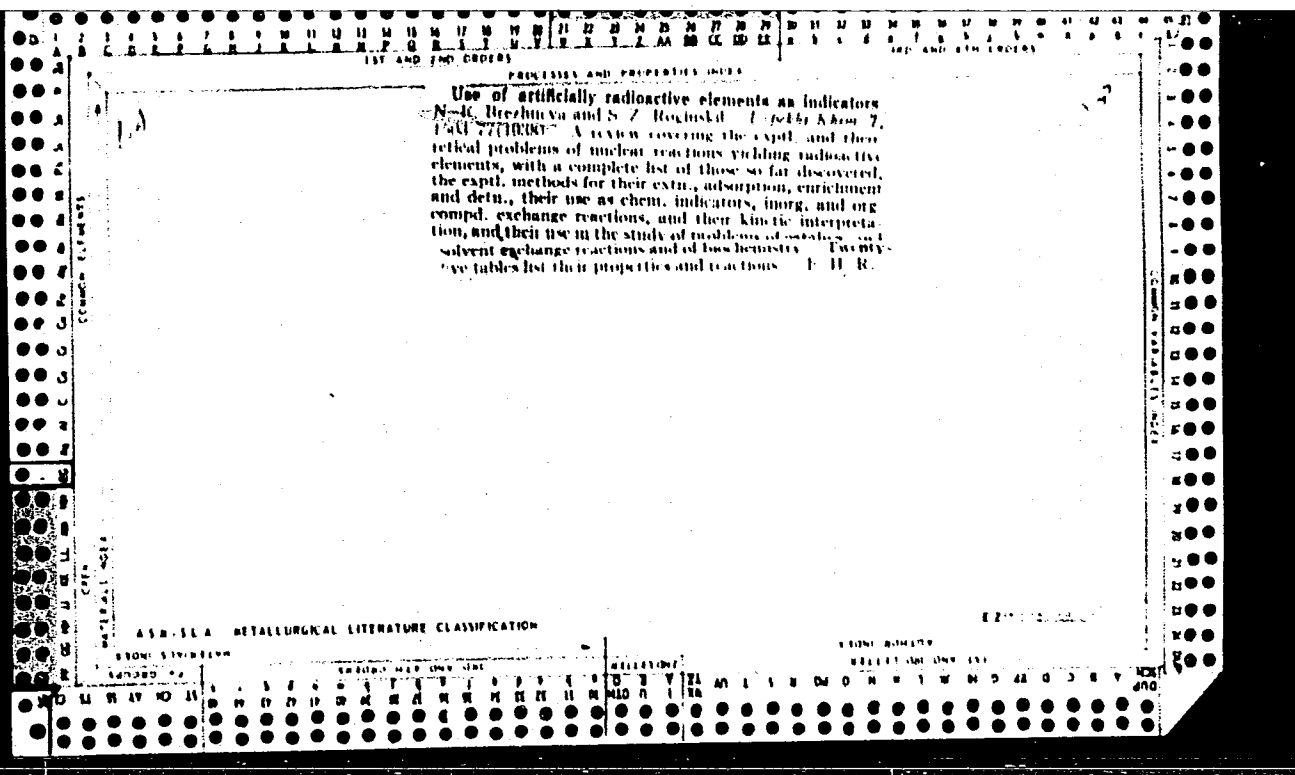
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<p>Velocity of exchange of solvate molecules as determined by experiments with radioactive halogens. N. E. Brezhnev, S. Z. Roginskii and A. I. Shul'skii. <i>J. Phys. Chem. (U. S. S. R.)</i> 9, 206-9 (1937); cf. C. A. 31, 2000. — Fractional pptn. by <math>\text{AgNO}_3</math> of a mixt. of a soln. of <math>\text{NaBr}</math> in <math>\text{EtOH}</math> with a soln. of radioactive <math>\text{NaBr}</math> in <math>\text{H}_2\text{O}</math> shows that active <math>\text{Br}</math> is pptd. first. From a mixt. of <math>\text{NaBr}</math> in <math>\text{H}_2\text{O}</math> and active <math>\text{NaBr}</math> in <math>\text{EtOH}</math> inactive <math>\text{Br}</math> is pptd. first. This shows that <math>\text{Br}</math> solvated by <math>\text{H}_2\text{O}</math> reacts more quickly with <math>\text{Ag}</math> than <math>\text{Br}</math> solvated by <math>\text{EtOH}</math>, and that the exchange of <math>\text{H}_2\text{O}</math> and <math>\text{EtOH}</math> in the solvates of <math>\text{Br}</math> is a slow process (requiring several hrs.). B. C. A.</p>																																																			
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2

CA

Kinetics of the isotopic bromine exchange between aluminum bromide and ethyl bromide. N. H. Brezhnev, S. Z. Roginskii and A. I. Shilinskii. *J. Phys. Chem.* (U. S. S. R.) 10, 367-71 (1937).—By use of radioactive  $\text{AlBr}_3$  and inactive  $\text{C}_2\text{H}_5\text{Br}$ , it was shown that the exchange reaction in the temp. interval  $-23^\circ$  to  $42^\circ$  agrees with  $\text{const. } E = 11 \pm 2 \text{ Cal.}$  and that  $k = A e^{-E/RT} = 2 \times 10^{-11.3} \times 10^{-10} \text{ sec.}^{-1} \text{ mol.}^{-1} \text{ cc.}$  With the Moelwyn-Hughes theory, the steric factor is then between  $10^1$  and  $10^2$  but should probably be multiplied by  $10^1$  to correct for increased collision frequency in the liquid state. P. H. R.

458-554 METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDER REACTIONS AND PROPERTIES INDEX

2

CA

Mechanism of catalytic reactions of halogens and their derivatives. 1. Kinetics of the catalytic replacement of hydrogen in benzene. M. K. Krasnaya and S. Z. Rogin. *Acta Physicochim. U. S. S. R.* 19, 910-94 (1940) (in Russian). — The reaction  $\text{C}_6\text{H}_6 + \text{Br}_2 + (\text{ZnBr}_2) \rightarrow \text{C}_6\text{H}_5\text{Br} + \text{HBr} + (\text{ZnBr}_2)$  alone or in amyl ether soln. is first order with respect to  $\text{C}_6\text{H}_6$ ,  $\text{Br}_2$  and to  $\text{ZnBr}_2$  and is retarded by the accumulation of the reaction product  $\text{C}_6\text{H}_5\text{Br}$ . This retardation leads to an apparent increase in the order with respect to the initial components, and B. and R. assume that this retardation is the cause of the discrepancies as to the order of the reaction for  $\text{I}_2$ ,  $\text{AlBr}_3$ , etc., as catalysts as found in the literature. The corrected velocity constants are  $1.85 \times 10^{-3}$  at  $325^\circ\text{K}$ ,  $0.5 \times 10^{-3}$  at  $333^\circ\text{K}$ , and  $3.5 \times 10^{-3}$  at  $313^\circ\text{K}$ ;  $E = 8$  cal./mol. Exptl. data are given. F. H. Rathmann

ASTM-15A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDER REACTIONS

1ST AND 2ND ORDER REACTIONS

BREZHNEVA, N.YE.

"Study of the Mechanism of Catalytic Reactions by the Method of Artificially  
Radioactive Indicators"  
Zhur. Fiz. Khim., vol. 14, no. 9-10, 1940

BREZHNEVA, N. E.

Radiochemical methods of investigating catalysts. N. E.  
Brezhneva. *Problemy Kinetiki i Kataliza, Akad. Nauk  
Sovetsk. Fiz. Khim. S. Mendel'skii Khim. Inst.*  
1948, 24(1948). A review with 23 references.  
Gladys S. Macy.

BREZHNEVA, N. Ye., ROGINSKIY, S. Z.

"Radiobromide Study of the Mechanism of Homogeneous Catalytic Bromination and Isomerization of Bromides."

Problems Kinetics and Catalysis, v. 9, Isotopes in Catalysis, Moscow, Izd-vo AN SSSR, 1957. 442p.

Most of the papers in this collection were presented at the Conf. on Isotopes in Catalysis which took place in Moscow, Nov 21 - Apr 5, 1956.



BREZHNEVA, N.Ye.; ROGINSKIY, S.Z.

Study of homogeneous catalytic bromination and isomerization of  
bromides by using radioactive bromine. Probl. kin. i kat. 9:201-  
214 '57. (MIRA 11:3)  
(Bromination) (Chemical reaction, Rate of) (Bromine--Isotopes)

# NAME I BOOK EXPLANATION 00V/5004

International Conference on the Peaceful Uses of Atomic Energy, 24, Geneva, 1958.  
 Politya sovetskikh nauchnykh. [6-4] Datsykn radioizmereniy i radiatsionnoy  
 prevremennosti (Reports of Soviet Scientists. V. 4: Chemistry of Radio-  
 elements and Radiation Transformations) Moscow, Akademiya, 1959. 353 p.  
 8,000 copies printed. (Series: Itsi Trudy)

M. (Title page) A. P. Vinogradov, Akademik; Ed.: V. I. Iabakov; Tech. Ed.:  
 Ya. I. Mezel.

PURPOSE: This collection of articles is intended for scientists and engineers  
 interested in the applications of radioactive materials in science and  
 industry.

CONTENTS: The book contains 25 separate studies concerning various aspects of  
 the chemistry of certain radioactive elements and the processes of radiation  
 effect on matter. These reports discuss specially methods of reprocessing  
 irradiated nuclear fuel, research in the chemistry of mercury, thorium,  
 uranium, plutonium, and americium, problems related to the sorption and bury-  
 ing of radioactive wastes, the radiolysis of aqueous solutions and of  
 organic compounds, the mechanism of polymer chain scission, and the effect  
 of radiation on natural and synthetic rubbers. V. I. Prusakov edited the  
 present volume. Most of the reports are accompanied by references. Con-  
 tributors to individual investigations are mentioned in annotations to  
 the Table of Contents.

## NAME OF CONTENT

Vinogradov, A. P. Microscopies and the Earth's Crust (The Geochimistry of Isotopes) (Report No. 2593)	5
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[The following personalities are mentioned as having taken part in this investigation: V. M. Isakov, L. P. Isakovskiy, Ya. V. Uralskiy, L. E. Sverdlov, and V. V. Gubovskiy.]	
Korotkiy, V. M., and M. P. Komil'skiy. Separation of Uranium and Pluto- nium from Fusion Products by Extraction with a Mixture of Diethyl Ether and Octan-2-one (Report No. 2216)	34
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[The authors thank I. E. Elvitz and A. E. Kozlovskiy.]	
Barabara, M. Ya., V. I. Levit, G. V. Koryunov, N. M. Malyuk, Ya. E. Buzikov, L. N. Buzikov, and G. P. Platonov. Separation of Fragmen- tation Radioactive Elements (Report No. 2235)	57
[The authors thank B. E. Bogdanov, Corresponding Member AS USSR.]	
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Gerasimov, I. I., V. A. Golovinskiy, G. V. Silvert, R. N. Shchegolev, and V. P. Buzikov. Chemical Problems of the Structure of the Complex Compounds of Uranium (Report No. 2138)	98
[The individual studies of the following researchers have been included in the last part of this paper: M. N. Tsvetkov, L. E. Gubovskiy, E. V. Seregin, and L. V. Tsvetkov.]	
Gerasimov, I. I., V. A. Golovinskiy, and A. E. Malyuk. Complex Carbonate Compounds of Uranium (Report No. 2136)	128
[A. M. Babitskiy is mentioned for his part in this study.]	

S/186/60/002/002/010/022  
E071/E433

AUTHORS: Panova, M.G., Levin, V.I. and Brezhneva, N.Ye.  
TITLE: A study of the formation of complexes of yttrium  
I. Yttrium oxinates

PERIODICAL: Radiokhimiya, 1960, Vol.2, No.2, pp.197-207

TEXT: The object of the work was to investigate the formation of complexes of microquantities of yttrium. The method of investigation was based on changes in the coefficient of distribution of an easily extractable complex with known stability constants, on the introduction of additives, which form non-extractable complexes, into the system. As an auxiliary system, the authors chose complexes of yttrium with 8-oxyquinoline (oxin), which is of interest by itself as there are no data available on this system in the literature. The present paper describes the first part of the work - a study of oxinate complexes of yttrium. The measurement of the coefficients of distribution of yttrium oxinate was done in a perchlorate solution with the ionic force  $\mu = 3.0$ . The distribution of yttrium was done radiometrically using radioactive yttrium -90 or -91. Initially, the usual experimental procedure was adopted, i.e. shaking an aqueous solution

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A study of the formation ...

of a required composition with a chloroform solution of oxin, but due to the hydrolysis of yttrium the reproducibility of results was poor and a long time was necessary to attain the equilibrium. The procedure was modified in that 10 ml of 3 M sodium perchlorate solution containing yttrium was shaken with 10 ml of an oxin solution in chloroform. After the separation of the organic phase, which contained practically all the yttrium, it was brought into contact with an aqueous solution containing no yttrium. Then the phases were separated by centrifuging and the activity of yttrium measured in both phases. The experimental temperature was 18 - 26°C. The concentration of oxin in chloroform was 0.5 M in all experiments. At yttrium concentrations  $\leq 10^{-6}$  M the coefficient of distribution was practically constant, i.e. was independent of concentration, but for concentrations above  $10^{-6}$  M the coefficient of distribution increased. Therefore, all the results used for the calculations of the stability constants of oxinate complexes were obtained at a concentration of yttrium below  $10^{-6}$  M. At these concentrations, the extraction takes place in the form of a simple oxinate  $YA_3$ ; at higher concentrations mainly in the form of dimer  $(YA_3)_2$ .

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A study of the formation ...

On the average 0.5 molecules of undissociated oxin enters the extractable complex. The constants of stability of oxinate complexes ( $\log \kappa_1 = 8.15 \pm 0.14$ ,  $\log \kappa_2 = 14.90 \pm 0.25$ ,  $\log \kappa_3 = 20.25 \pm 0.35$ ) were calculated by three methods: "method of two parameters" (D.Dyrssen, L.Sillen, Acta chem. Scand., 7, 663 (1953)); a modification of this method using three parameters and by the analytical method of least squares. The differences in the values obtained by the three methods were close to the limits of accuracy of the experimental results. It is pointed out that although the values of the obtained constants relate to the ion force  $\mu = 3$ , nevertheless they were close to the values of constants for samarium oxinate obtained by Dyrssen (Ref.47: Sv.Kem.Tidskrift, 68, 212 (1956)). Part II of this paper (on sulphate, nitrate and chloride complexes) is published in the same issue, pp.208-214. There are 4 figures, 6 tables and 47 references: 11 Soviet-bloc and 36 non-Soviet-bloc. Four of the references to English language publications read as follows: L.Pokras, Chem.Educ., 33, 152, 223, 282 (1956); F.Spedding, J.Powell, W.Wheelwright, J.Am.Chem.Soc., 78, 34 (1956); Card 3/4

A study of the formation...

S/186/60/002/002/010/022  
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J.Sarls, J.Choppin, J.Inorg.Nucl.Chem., 4, 62, (1957);  
B.Blaustein, J.Gryder, J.Am.Chem.Soc., 79, 540 (1957).

SUBMITTED: May 25, 1959

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S/186/60/002/002/011/022  
EO71/E433

AUTHORS: Panova, M.G., Brezhneva, N.Ye. and Levin, V.I.  
TITLE: A study of the formation of complexes of yttrium<sup>21</sup>  
II. Sulphate, nitrate and chloride complexes

PERIODICAL: Radiokhimiya, 1960, Vol.2, No.2, pp.208-214

TEXT: This is continuation of the work previously published (Ref.1: same issue, pp.197-207). The investigation of the formation of yttrium complexes with sulphate, nitrate and chloride ions was based on measuring the distribution of this metal in the system: solution of 8-oxiquinoline in chloroform-aqueous solution, at various concentrations of the above ions and at a constant ion force  $\mu = 3$ . The presence of the above ions in the system causes a decrease in the coefficient of distribution of yttrium due to the formation of complexes not extractable by chloroform, which in turn can serve as a measure of the degree of formation of these complexes. The experimental procedure was the same as described in Part I (Ref.1). The calculation of the constants of formation of non-extractable yttrium complexes (sulphate etc) was based on the relationship derived between the coefficients of distribution of

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S/186/60/002/002/011/022  
E071/E433

A study of the formation of...

yttrium determined at the same pH but in the presence of sulphate (or another) ion and without it, i.e. by the method based on the same principle as that of D.Dyrssen and L.Sillen (Ref.2: Acta chem. Scand., 7, 663 (1953)). There are 3 figures, 3 tables and 10 references: 2 Soviet-bloc and 8 non-Soviet-bloc. Four of the references to English language publications read as follows:  
J.W.Newton, J.M.Arcand. J.Am.Chem.Soc., 75, 10, 2449 (1953);  
R.Connack, S.Mayer, J.Am.Chem.Soc., 73, 1176 (1951);  
F.H.Spedding, S.Jaffe, J.Am.Chem.Soc., 76, 3, 882 (1954);  
V.Bjerrum, G.Schwarzenbach and L.G.Sillen. Stability Constants of Metal-ion Complexes, with Solubility Products of Inorganic Substances, London (1958).

SUBMITTED: May 25, 1959

Card 2/2



S/186/60/002/005/005/017  
A051/A130

AUTHORS: Patrusheva, Ye. N.; Brezhneva, N. Ye.; Korpusev, G. V.

TITLE: The extraction of rare earth products of division using phosphorous-organic compounds (diamylphosphoric acid)

PERIODICAL: Radiokhimiya, v. 2, no. 5, 1960, 541 - 548

TEXT: The authors have investigated a group of alkylphosphoric acids as extracting agents for the formation of micro-quantities of itrium and rare earth elements. Data are submitted on the distribution of certain rare earth elements amongst solutions of diamylphosphoric acid ( $C_5H_{11}O)_2POOH$  (abbreviated HA) and of nitric acid. A study was made of the relationship of the distribution coefficients of these rare earth elements in the extraction using diamylphosphoric acid, to the concentration of: a) nitric acid, b) hydrogen ions, c) extracting agent, d) nitrate-ions, and also a determination was made of the relationship of the distribution coefficients of rare earths to the values of their atomic numbers. A probable mechanism for extraction of rare earth elements has been recommended using diamylphosphoric acid and an evaluation was given of the equilibrium

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The extraction of rare earth ....

constant of the reaction of the extracting complex formation. The main experimental investigations were carried out with uni-basic diamylphosphoric acid, actually not containing dibasic acid ( $H_2A$ ). The HA also did not contain isoforms. The experiments showed that when extracting with diisodiamylphosphoric acid, the distribution coefficients obtained were somewhat less. Benzene and hydrated kerosene were used as the diluents which were first brought to equilibrium with the initial solutions. The extraction was conducted in graduated funnels of the usual type, at a temperature maintained at  $\pm 30^\circ C$ . The determination of the initial and equilibrium acidity of the water phase was carried out by direct titration with alkali. The element distribution was determined using radioactive indicators  $Ce^{144} \rightarrow Pr^{144}$ ;  $Pm^{147}$ ,  $Y^{91}$ ,  $Tu^{169}$ ,  $Eu^{152-154}$ . Since  $Ce^{144}$  in its radioactive decay forms its bi-product  $Pr^{144}$ , having a half-life of 17.5 min., the measurements of the specific activity were carried out after a radioactive equilibrium was reached (after 1.5 - 2 hours). The experimental procedure determined: 1) the relationship of the distribution coefficients of itrium and europium to the concentration of nitric acid, 2) to the concentration of the hydrogen ions, 3) of the nitrate ions, 4) of the diamylphosphoric

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The extraction of rare earth ....

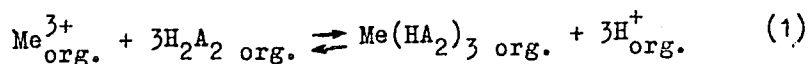
acid, 5) the relationship of certain rare earth element distribution coefficients to their atomic numbers. Tables 1, 2 and Figures 1 - 5 show the experimental results, respectively. In discussing the obtained data the authors point out that these showed that within the region of low acidity, the distribution coefficients of the rare earth elements, when extracted with diamylphosphoric acid, are directly proportional to the third degree of concentration of the diluent in the organic phase and reversely proportional to the third degree of concentration of the hydrogen ions in the water phase and do not depend on the content of the nitrate ions in the system. Based on these data the authors conclude that within the range of the given acidity, organic salts are extracted of rare earth metals. It is said that a usual reaction of salt formation takes place, with subsequent dissolution of these in the organic phase. The absence of, within limits, anions of the corresponding mineral acids in the organic phase, when their concentration in the water phase did not exceed 2M, is given as proof of this extraction mechanism. The authors have also shown that although in the organic phase the diamylphosphoric acids are completely dimerized, (Ref. 6 - 8: C. F. Coleman, J. Phys. Chem., 62, 2, 129 (1958);

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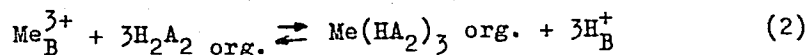
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The extraction of rare earth .....

D.F. Pappard, G. W. Mason, J. L. Maier, W. J. Driscoll, J. Inorg. Nuclear Chem. 4, 5-6, 334, 1957; D.F. Peppard, G. W. Mason, S. W. Moline, J. Inorg. Nuclear Chem. 5, 2, 141, 1957;), yet, regardless of the degree of aggregation, the polymer molecule (or in this case the dimer molecule) of the di-amyolphosphoric acid, dissociates as a uni-basic acid, forming only one hydrogen ion. Thus, the authors present the equilibrium equation in the organic phase in the following form:



An expression relating to two equilibrial phases is given by introducing the corresponding equations of equilibrium, representing the distribution of  $\text{Me}^{3+}$  and  $\text{H}^+$  between the organic and water phases:



The equilibrium constant of this reaction (q) is given as being:

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$$q = \frac{[\text{Me}(\text{HA}_2)_3]_{\text{org.}} [\text{H}^+]_{\text{B}}^3}{[\text{Me}^{3+}]_{\text{B}} [\text{H}_2\text{A}_2]_{\text{org.}}^3} \quad (3)$$

At low concentration of  $\text{HNO}_3$  ( $< 2\text{M}$ )  $\text{Me}^{3+}$  is actually the only form in the water phase, i.e., the relative concentrations of other forms in the water phase are low. Thus, in this case the ratio

$$\frac{[\text{Me}(\text{HA}_2)_3]_{\text{org.}}}{[\text{Me}^{3+}]_{\text{B}}}$$

is replaced by  $K_p$  the distribution coefficient, and the equilibrium constant of equation (2)  $P$  will acquire the following form after substituting and taking the log.:

$$\lg q = \lg K_p + 3 \lg [\text{H}^+]_{\text{B}} - 3 \lg [\text{H}_2\text{A}_2]_{\text{org.}} \quad (4)$$

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Taking into account that the analytical concentration of the extracting agent will be twice that of the concentration of its dimer form, equation (4) is rewritten for the equilibrium constant in the following form:

$$\lg q = \lg K_p + 3 \lg [H^+]_B - 3 \lg [HA]_{org.} + 3 \lg 2 \quad (5).$$

Equation (5) was used to evaluate the equilibrium constant for ittrium, without taking into account the hydrolysis and dissociation phenomena. Table 3 shows the values of the equilibrium constants obtained for ittrium. At higher acidities of the water phase, the drop in the distribution coefficients of the rare earth elements is slowed up, and then a certain increase in their values is noted. The latter is explained by the fact that with an increase in the concentration of the hydrogen ions, the mechanism of extraction itself is changed. An assumption is made that at high concentrations of hydrogen ions another extraction mechanism is present to that indicated. There are three tables, 5 figures and 10 references: 1 Soviet-bloc and 9 non-Soviet-bloc. The four recent English language pub-

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The extraction of rare earth ....

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lications read as follows: D. Dyrssen, Acta Chem. Scand., 11, 7, 1277, 1957; L. Selmi, F. Fuss, Chim.ind., 40, 193, 1958; C. F. Coleman, J. Phys. Chem., 62, 2, 129, 1958; J. R. V. Warer, Phosphorus and its Compounds, 1, N.Y.L., 1958.

Table 1: (1) Relationship of the distribution coefficients of ittrium and europium to the concentration of the nitric acid. (2) Element, (3) Concentration of HA (in M); (4) Diluent; (5) Equilibrial Concentration of  $\text{HNO}_3$  in the water phase, (in M); (6) Distribution Coefficient  $K_p$ ; (a) kerosene; (b) benzene; (c) benzene.

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PANOVA, M.G.; LEVIN, V.I.; BREZHNEVA, N. Ye.

Complex formation by yttrium. Part 1: Yttrium oxinates.  
Radiokhimiia 2 no.6:197-207 '60. (MIRA 14:4)  
(Yttrium compounds)  
(Quinolinol)



PANOVA, M.G.; BREZHNEVA, N. Ye.

Complex formation by yttrium. Part 2: Sulfate, nitrate, and  
chloride complexes. Radiokhimiia 2 no.6:208-214 '60.

(MIRA 14:4)

(Yttrium compounds)

S/076/60/034/04/41/042  
B010/B009

AUTHORS: Brezhneva, N. Ye., Dobychin, D. P., Zhabrova, G. M.

TITLE: S. Z. Roginskiy (On the Occasion of His 60th Birthday)

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 4, pp. 939 - 940

TEXT: On March 25, 1960 the excellent scholar Simon Zalmanovich Roginskiy, Corresponding Member of the AS USSR, who has done outstanding research work in the field of catalysis, completed his 60th year of life. Roginskiy graduated from the Dnepropetrovskiy politekhnicheskii institut (Dnepropetrovsk Polytechnic Institute) in 1922 and took up research work in the field of heterogeneous catalysis in the laboratories of the well-known physicochemists, Academician D. P. Kononov and L. V. Pisarzhevskiy. In 1926 Roginskiy collaborated with A. I. Shal'nikov at the Fiziko-tekhnicheskii institut (Physicochemical Institute) directed by A. F. Ioffe in the preparation of metal sols by condensation. In 1929 he was appointed permanent collaborator of the Institut khimicheskoy fiziki (Institute of Chemical Physics) by Ioffe and N. N. Semenov. In 1932 Roginskiy there became head of the laboratoriya kataliza i topokhimii (Laboratory for Catalysis and Topochemistry), which was incorporated into the Kolloido-

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S. Z. Roginskiy (On the Occasion of His 60th Birthday) S/076/60/034/04/41/042  
B010/B009

elektrokhimicheskiy institut (Colloid Electrochemical Institute) (now the Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR)) in 1941. During his scientific activities S. Z. Roginskiy published more than 300 papers. From 1937 to 1939 Roginskiy, D. P. Dobychin, and T. F. Tselinskaya did research in the field of the theory of supersaturation. Problems of the reaction course on catalyst surfaces, which Roginskiy had studied in collaboration with O.M. Todes, were published in the monograph "Adsorbtsiya i kataliz na neodnorodnykh poverkhnostyakh" ("Adsorption and Catalysis on Heterogeneous Surfaces") (1948). For his work in the field of efficiency and improvement of military material during the Second World War Roginskiy and S. Yu. Yelovich, G. M. Zhabrova, L. Ya. Margolis, and B. M. Kadenatsi received awards of the Narkom Oborony (People's Commissar for Defense) and the Prezidium Akademii nauk SSSR (Presidium of the Academy of Sciences USSR). In 1946 S. Z. Roginskiy began to deal with the catalytic oxidation of gaseous substances. He collaborated with S. Yu. Yelovich, G.M. Zhabrova, and L. Ya. Margolis and came to formulate the "electron chemical concept of catalysis". In 1954 Roginskiy made some observations, with A. A. Balandin, G. K. Boreskov, N. M. Chirkov, and others, on the choice of catalysts. For several years S. Z. Roginskiy systematically investigated catalytic properties of inorganic semiconductors in collaboration with O. V. Krylov, Ye. A. Fokina, and

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S. Z. Roginskiy (On the Occasion of His 60th Birthday) S/076/60/034/04/41/042  
B010/B009

V. M. Frolov. In 1935 Roginskiy and N. Ye. Brezhneva had for the first time in the USSR used radioisotopes for the investigation of chemical reactions. He also developed several isotope methods (in collaboration with N. P. Keyer and M. I. Yanovskiy, respectively). In 1956 S. Z. Roginskiy published the book "Teoreticheskiye osnovy izotopnykh metodov izucheniya khimicheskikh reaktsiy" ("Theoretical Fundamentals of the Isotope Methods for the Study of Chemical Reactions"). Together with A. B. Shekhter Roginskiy investigated chemical reactions in the electric discharge. He collaborated with I. I. Tret'yakov in investigating by electron microscopy the surfaces of metals and disperse bodies. Roginskiy also devoted himself to the training of the scientific staff at the Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute for the Construction of Chemical Machinery). He is an editor of "Problemy kinetiki i kataliza" ("Problems of Kinetics and Catalysis") of which 10 volumes have appeared so far. For his achievements he was twice awarded the Stalin Prize as well as the Order of Red Worker's Banner and several medals. There is 1 figure. ✓

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BRIZHNEVA, N.Ye.; OZIRANER, S.N.; ROZANOVA, V.N.

Adsorption of cations on iron hydroxyacetate precipitates. Zhur.  
fiz. khim. 34 no.8:1866-1871 Ag '60. (MIRA 13:9)  
(Iron acetate) (Adsorption)

23877

S/186/61/003/001/010/020  
A051/A129

5 2000 (1273, 1278, 1274)

AUTHORS: Panova, M.G., Levin, V.I., Brakhova, N.Ya.

TITLE: A study of the complex-formation of yttrium  
IV. Oxalate complexes

PERIODICALS: Radiokhimiya, v 3, no 1, 1961, 52-61

TEXT: The authors used the method of solubility measurements of difficultly-soluble oxalates of rare-earth elements to investigate oxalate complexes. They made a study of the complex-formation of yttrium and cerium previously dealt with in Refs 2,3. The investigation was started by determining the instability constants of the cerium oxalate complexes (Ref 2), also used for determining the instability constants of the yttrium oxalate complexes. The  $\text{Ce}^{144}$  and  $\text{Y}^{91}$  or  $\text{Y}^{90}$  isotopes were used to precipitate cerium or yttrium oxalate. The effect of the addition of the reagents on the crystallization process and equilibrium state was analyzed (Table 1), whereby it was noted that the order of addition of the reagents did not affect the velocity of

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attaining the equilibrium state. The calculations of the stability constants of the yttrium and cerium oxalate complexes were conducted along the following lines:

The product of solubility  $S$  of cerium (or yttrium) oxalate- $\text{Me}_2(\text{C}_2\text{O}_4)_3$  is expressed by the equation:

$$S = a_{\text{Me}}^2 \cdot a_{\text{C}_2\text{O}_4}^3 \quad (1)$$

$$\text{from which results } a_{\text{Me}} = \frac{S^{1/2}}{a_{\text{C}_2\text{O}_4}^{3/2}} \quad (2)$$

If three oxalate complexes  $\text{Me}(\text{C}_2\text{O}_4)^+$ ,  $\text{Me}(\text{C}_2\text{O}_4)_2^-$ ,  $\text{Me}(\text{C}_2\text{O}_4)_3^{3-}$  are assumed to be formed, the conditions of the three equilibria are expressed thus:

$$a_{\text{Me}} \cdot a_{\text{C}_2\text{O}_4}^{2-} \cdot x_1 = a_{\text{Me}(\text{C}_2\text{O}_4)^+} \quad (3)$$

$$a_{\text{Me}} \cdot a_{\text{C}_2\text{O}_4}^{2-} \cdot x_2 = a_{\text{Me}(\text{C}_2\text{O}_4)_2^-} \quad (4)$$

$$\text{Card 2/18 } a_{\text{Me}} \cdot a_{\text{C}_2\text{O}_4}^{2-} \cdot x_3 = a_{\text{Me}(\text{C}_2\text{O}_4)_3^{3-}} \quad (5)$$

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A051/A129

A study of the complex-formation of yttrium

where  $\chi_1, \chi_2, \chi_3$  are the sum constants of stability of complex ions,  $a_{Me}$ ,  $a_{C_2O_4^{2-}}$  activities corresponding to metal and oxalate ions, which, in turn, can be expressed by

$$a_{Me} = [Me] \cdot \gamma_3 \quad (6)$$

$$a_{C_2O_4^{2-}} = [C_2O_4^{2-}] \cdot \gamma_2 \quad (7)$$

where  $[Me]$ ,  $[C_2O_4^{2-}]$  are stoichiometric concentrations of the metal and oxalate ions, respectively,  $\gamma_2, \gamma_3$  - the activity coefficients of the two-charge and three-charge ions, respectively. The total concentration of the metal ions in the solution is equal to:

$$[Me]_{total} = [Me^{3+}] + [Me(C_2O_4)^+] + [Me(C_2O_4)_2^-] + [Me(C_2O_4)_3^{3-}] \quad (8)$$

using the relations (2-7) equation (8) is changed to:

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$$\begin{aligned}
 Me_{total} &= \frac{a_{Me}}{\gamma_3} + \frac{a_{Me} \cdot a_{C_2O_4^{2-}} \cdot x_1}{\gamma_1} + \frac{a_{Me} \cdot a_{C_2O_4^{2-}}^2 \cdot x_2}{\gamma_1} + \frac{a_{Me} \cdot a_{C_2O_4^{2-}}^3 \cdot x_3}{\gamma_3} \\
 &= a_{Me} \left[ \frac{1}{\gamma_3} + \frac{x_1 \cdot a_{C_2O_4^{2-}}}{\gamma_1} + \frac{x_2 \cdot a_{C_2O_4^{2-}}^2}{\gamma_1} + \frac{x_3 \cdot a_{C_2O_4^{2-}}^3}{\gamma_3} \right] \\
 &= \frac{S^{1/2}}{a_{C_2O_4^{2-}}^{3/2}} \cdot \left[ \frac{1}{\gamma_3} + a_{C_2O_4^{2-}} \cdot \frac{x_1}{\gamma_1} + a_{C_2O_4^{2-}}^2 \cdot \frac{x_2}{\gamma_1} + a_{C_2O_4^{2-}}^3 \cdot \frac{x_3}{\gamma_3} \right] \quad (9)
 \end{aligned}$$

where  $\gamma_1$  is the activity coefficient of the one charge ion. In equation (9) the unknown values are  $x_1$ ,  $x_2$ ,  $x_3$  and  $S$ . In order to determine these, the two parameters  $\alpha$  and  $\beta$  are introduced. Since the ionic strength was main-

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tained constant in the experiments, the values of the activity coefficients are also considered constant, then

$$\alpha_1 = \frac{\gamma_1}{\gamma_3} 10^a \cdot \beta^2 \quad (10)$$

$$\alpha_2 = \frac{\gamma_1}{\gamma_3} 10^{2a} \beta^2 \quad (11)$$

and  $\alpha_3 = 10^{3a} \quad (12)$

By introducing the expression  $y = a \frac{c_2 c_0^2}{c_4} \cdot 10^a \quad (13)$

for convenience, equation (9) is changed thus:

$$[Me]_{total} = \frac{S^{1/2}}{a^{3/2} \frac{c_2 c_0^2}{c_4} \gamma_3} \{1 + y\beta^2 + y^2\beta^2 + y^3\} \quad (14)$$

the expression:

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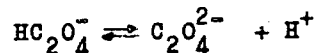
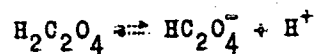
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$$[\text{Me}]_{\text{total}} \cdot a_{\text{C}_2\text{O}_4^{2-}}^{3/2} = \frac{s^{1/2}}{\gamma_3} \{1 + y\beta^2 + y^2\beta^2 + y^3\} \quad (15)$$

would then only depend on  $y$ . A graph is plotted of the relationship

$\lg \{[\text{Me}]_{\text{total}} \cdot a_{\text{C}_2\text{O}_4^{2-}}^{3/2}\} = f \{ \lg(a_{\text{C}_2\text{O}_4^{2-}}) \}$ , by calculating the activity of the free ions of oxalate, depending on the pH and its stoichiometric concentration  $C_s$ . Oxalic acid dissociates according to:



The corresponding dissociation constants are equal to (Ref 4):

$$K_1 = \frac{\gamma_1 \cdot [\text{HC}_2\text{O}_4^-] \cdot a_{\text{H}^+}}{[\text{H}_2\text{C}_2\text{O}_4]} = 5.9 \cdot 10^{-2} \quad (16)$$

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$$K_2 = \frac{\gamma_2 \cdot [C_2O_4^{2-}] \cdot a_{H^+}}{[HC_2O_4^-] \cdot \gamma_1} = 6.4 \cdot 10^{-5} \quad (17)$$

thus:

$$C_2O_4^{2-} = \frac{C}{\frac{1}{\gamma_2} + \frac{a_{H^+}}{K_2 \cdot \gamma_1} + \frac{a_{H^+}^2}{K_1 \cdot K_2}} \quad (18)$$

The required values of  $\gamma_1$  and  $\gamma_2$  needed for the calculations were taken from Refs 2, 3. Knowing the concentration of the free ions of the oxalate in solution and the concentration of the metal near the residue the product

$\{[Me] \cdot C_2O_4^{2-}\}^{3/2}$  is found. A graph of the relationship  $\lg \{[Me] \cdot C_2O_4^{2-}\}^{3/2}$

to  $\lg a_{C_2O_4^{2-}}$  (Fig. 2-3) is plotted. From equations (10-12) it is seen that

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A study of the complex-formation of yttrium

In order to determine the stability constants, the parameters  $\alpha$  and  $\beta$  must be calculated. Thus, the following maximum conditions are considered for expression (15), writing it down first in the logarithmic form:

$$f(y) = \lg[\text{Me}]_{\text{total}} + 3/2 \lg a_{\text{C}_2\text{O}_4^{2-}} - 1/2 \lg S - \lg \gamma_3 + \lg[1 + y\beta^2 + y^2\beta^2 + y^3] \quad (19)$$

at  $y \rightarrow 0$

$$f_1(y) = \lg[\text{Me}]_{\text{total}} + 3/2 \lg a_{\text{C}_2\text{O}_4^{2-}} - 1/2 \lg S - \lg \gamma_3 = A \quad (20)$$

A is determined from the intersection of the lower branch of the curve of the ordinate (Fig 2,3. Table 5). At  $y \rightarrow \infty$

$$f_2(y) = \lg[\text{Me}]_{\text{total}} + 3/2 \lg a_{\text{C}_2\text{O}_4^{2-}} = A + 3 \lg y \quad (21)$$

from which follows that the maximum value of the tangent of the angle of the curve's slope  $f(y)$  is equal to 3. The intersection of the limit line  $f_2(y)$  and horizontal limit line  $f_1(y) = \lg[\text{Me}]_{\text{total}} + 3/2 \lg a_{\text{C}_2\text{O}_4^{2-}} = A$ , corresponds to the condition  $\lg y = 0$  (or  $y = 1$ ).

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A study of the complex-formation of yttrium

Since  $y = 10^a \cdot a_{C_2O_4^{2-}}$ , then  $y = 1$ ,  $a = -\lg a_{C_2O_4^{2-}}$ . The value of  $a$  is determined by drawing a perpendicular line on the abscissa axis from a point of intersection of the horizontal line  $f_1(y) = \lg [Fe]_{total} + 3/2 \lg a_{C_2O_4^{2-}}$  with the limit line  $f_2(y) = A + 3 \lg y$ . The second parameter,  $\beta$ , is found from the value of the main function  $f(y)$  in the point  $y=1$ . According to (19) at  $y=1$   $f(y)_{y=1} = A + \lg 2 + \lg(1 + \beta^2)$  (22)

The value of  $f(1)$  is found from the point of intersection of the vertical line drawn through the point of intersection of the limit line  $f_2(y)$  and the line  $f_1(y) = A$  with the curve  $f(y)$ . Drawing a perpendicular line from this point on the ordinate axis, the value of  $f(1)$  is found. Substituting it in equation (22),  $\beta$  is determined. Figs 2-3 show that the tangents to the curves  $f(y)$  drawn at an angle, the tangent of which is equal to 3, pass through three points in the case of yttrium and through five points in the case of cerium. The authors assume that in the investigated range of concentration only two complexes are formed:  $Me(C_2O_4)^+$  and  $Me(C_2O_4)_2^-$ . In this case the stability constants of the complexes are expressed by the equations.

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$$\frac{x_1 \cdot \gamma_3}{\gamma_1} = 10^a \cdot \beta \quad (23) \quad \frac{x_2 \cdot \gamma_3}{\gamma_1} = 10^{2a} \quad (24)$$

and the main function  $f(y)$  takes the form of:

$$f(y) = \lg \{ [\text{Me}]_{\text{total}} \cdot a_{\text{C}_2\text{O}_4^{2-}}^{3/2} \} = A + \lg [1 + y + y^2] \quad (25)$$

The equations of the corresponding limit lines at  $y \rightarrow 0$  are then:

$$f_1(y) = \dots \quad (26) \quad \text{At } y \rightarrow \infty : f_2(y) = A + 2 \lg y \quad (27).$$

The tangents to the curves  $f(y)$  drawn at an angle the tangent of which is 2 in accordance with (27) pass through the entire middle part of the curves (Figs 2-3). The  $a$  parameter, similarly to the one previously described for the case of two complexes is found from the point of intersection  $f_1(y)$  and  $f_2(y)$  corresponding to the condition  $y=1$ . Parameter  $\beta$  is determined from the equation  $f(y) = A + \lg (2 + \beta)$  (28) obtained from (25) at  $y=1$ . The average values of  $\gamma_1$  and  $\gamma_3$  are calculated from experimental data and the formula:

$$\gamma = \int_{\mu_1}^{\mu_2} \gamma(\mu) \cdot d\mu / (\mu_2 - \mu_1) \quad (29)$$

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A study of the complex-formation of yttrium

The integration was performed graphically according to the method of rectangular triangles. In order to determine the three unknown factors in the given calculations two parameters were used, but three parameters can be introduced:

$$\alpha_1 = \frac{\gamma_1}{\gamma_3} 10^a \cdot \beta_1 \quad (30); \quad \alpha_2 = \frac{\gamma_1}{\gamma_3} 10^{2a} \cdot \beta_2 \quad (31); \quad \alpha_3 = 10^{3a} \quad (32);$$

$$\text{then } f(y) = A + \lg [1 + y\beta_1 + y^2\beta_2 + y^3] \quad (33).$$

Parameter  $\alpha$  is determined in this case as in the case of two parameters;  $f(y)$  is found at  $y=1$ .  $f(1) = A + \lg [2 + \beta_1 + \beta_2] \quad (34)$ , then another value of  $y$  is taken,  $y=2$ , and  $f(y)$  at  $y=2$  is:

$$f(y) = A + \lg [9 + 2\beta_1 + 4\beta_2] \quad (35).$$

These equations are solved with two unknowns, and first  $\beta_1$  and then  $\beta_2$  are found. The results of the calculations of the constants are given in Table 6. The agreement of results found by different methods of calculations shows that two parameters are sufficient.  $\alpha_1$  and  $\alpha_2$  are calculated correctly in both cases (Figs 2,3). The authors compare their graphical method of

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calculations to the results obtained by other authors (Ref 2). This comparison shows that the values of the solubility product are much higher than those found by other authors (Table 8). The values of the stability constants, however, differ less from those of Crouthamal and Martin, as well as Feibash (Ref 5). This is explained by the fact that the equilibrium between the various forms of the dissolved complexes is reached much faster than the equilibrium with the solid phase and is not subject to the effect of the structure, contrary to the latter. There are 8 tables, 5 figures and 6 references: 2 Soviet-bloc, 4 non-Soviet-bloc. X

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BREZHNEVA, N.Ye.; MARGOLIS, L.Ya.; TODES, O.M.; DOBYCHIN, D.P.;  
CHMUTOV, K.V.

Solomon IUL'evich Elovich. Zhur. fiz. khim. 35 no.5:1172-1173  
My '61. (MIRA 16:7)

(Elovich, Solomon IUL'evich, 1898-1961)

BREZHNEVA, N.Ye., doktor khim. nauk, red.; KOKOSOV, L.V., red.;  
POPOVA, S.M., tekhn. red.

[Methods for obtaining radioactive preparations] Metody polucheniia radioaktivnykh preparatov; sbornik statei. Moskva, Gosatomizdat, 1962. 170 p. (MIRA 15:9)  
(Radioactive substances)

PROKHOROVA, N.P.; BREZHNEVA, N.Ye.

~~XXXXXXXXXX~~  
Determination of the stability constants of  $\text{Hf}(\text{NO}_3)_4$  ions  
by the tributyl phosphate extraction method. Zhur. neorg.  
khim. 7 no.8:1846-1853 Ag '62. (MIRA 16:6)

(Hafnium nitrate) (Complex compounds)  
(Butyl phosphate)

S/078/62/007/009/007/007  
B144/B101

AUTHORS: Korpusev, G. V., Levin, V. I., ~~Brezhnava, N. Ye.~~,  
Prokhorova, N. P., Yeskevich, I. V., Seredenko, P. M.

TITLE: Extractive separation of cerium

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 9, 1962, 2254-2261

TEXT: Practical methods for extractive separation of  $Ce^{IV}$  from rare earth (RE) concentrates were developed by studying the distribution coefficients and taking account of the following factors: 1) The solvate formed in  $Ce^{IV}$  nitrate extraction by way of tributyl phosphate (TBP) from  $HNO_3$  media of different concentration is  $H_2[Ce(NO_3)_6] \cdot 2(C_4H_9)_3PO_4$ . On complete saturation the organic phase contains per liter 200-210 g metallic Ce or 250 g  $CeO_2$ . 2) When TBP is diluted with hydrated kerosene, xylene, toluene, or  $CCl_4$ , the capacity changes proportionally with the dilution. 3) TBP must be purified by oxidation or vacuum distillation. 4) The optimum  $HNO_3$  concentration is 3 - 5 moles/l and corresponds to the overall minimum  
Card 1/2

Extractive separation of cerium

S/078/62/007/009/007/007  
B144/B101

distribution coefficients of  $\text{Re}^{\text{III}}$ . 5) Oxidation should be obtained:

- a) by  $\text{H}_2\text{O}_2$  for  $\text{pH} > 5$  or by atmospheric  $\text{O}_2$ , if large quantities are involved;
- b) by  $\text{KBrO}_3$ ,  $\text{KMnO}_4$ , ozone, if small quantities must be separated.

6) Reextraction with  $\text{H}_2\text{O}_2$  dissolved in dilute  $\text{HNO}_3$  yields  $\text{Ce}^{\text{III}}$ . 7) The

$\text{RE}^{\text{III}}$  distribution coefficients depend on the Ce content in the organic phase and on the dilution of TBP. Hence 100% TBP and dilute TBP are suggested for the extraction respectively of large and small Ce quantities, or both methods can be combined. The operation is either continuous or intermittent. A plant consisting of one extraction and two washing stages is suggested. There are 4 figures and 5 tables. ✓

SUBMITTED: November 27, 1961

Card 2/2

L 14423-63

EWI(m)/BDS

AFFTC/ASD

ACCESSION NR: AP3003972

8/0089/63/015/001/0023/0030 54

AUTHOR: Brezhneva, N. Ye.; Levin, V. I.; Korpusev, G. V.; Bogacheva, Ye. K.;  
Man'ko, N. M.

TITLE: Separation of  $Zr^{95}$ ,  $Nb^{95}$ , and  $Ru^{106}$  from a mixture of fission products by extraction with tributyl phosphate 19

SOURCE: Atomnaya energiya, v. 15, no. 1, 1963, 23-30

TOPIC TAGS:  $Zr^{95}$ ,  $Nb^{95}$ ,  $Ru^{106}$ , fission product, fission-product extraction, extracting agent, tributyl phosphate extracting agent, reextraction, solvent extraction, complexing agent, hydrogen peroxide, oxalic acid, sodium nitrite, nitric acid concentration, zirconium complex, niobium complex, ruthenium complex, distribution coefficient,  $Ru^{106}$  sulfide coprecipitation

ABSTRACT: Methods were studied for obtaining radiochemically pure  $Zr^{95}$ ,  $Nb^{95}$ , and  $Ru^{106}$  by a general procedure for separation of fission products, described previously (N. Ye. Brezhneva, V. I. Levin, G. V. Korpusev i dr. V kn. "Trudy\* Vtoroy mezhdunarodnoy konferentsii po mirnomu ispol'zovaniyu atomnoy energii." Dokl. sov. ucheny-kh. T. 4. M., Atomizdat, 1959, str. 57.). The physicochemical mechanism of solvent extraction with tributyl phosphate (TBP) was investigated

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L 14423-63

ACCESSION NR: AP3003972

under static and dynamic conditions. Pure  $Zr^{95}$ ,  $Nb^{95}$ ,  $Ru^{106}$ ,  $Y^{91}$ ,  $Eu^{152}$ , and  $Eu^{154}$  radioactive isotopes were used to prepare synthetic solutions. In the static method, extraction was effected by shaking in separatory funnels a synthetic nitric acid solution of each of the three pure isotopes, with pure TBP or with a 40% solution of TBP in kerosene. It was shown that the distribution coefficient ( $K_D$ ) between the organic (TBP) phase and aqueous nitric acid 1) increases continuously during extraction of Nb or Zr when the equilibrium concentration of  $HNO_3$  is increased, but passes through a sharp maximum in the case of Ru; 2) is much lower on extraction of Nb or Zr with dilute TBP than with pure TBP; 3) increases as the square of TBP concentration in the organic phase during extraction of Nb with dilute TBP; 4) is much higher in reextraction than in extraction of Nb or Zr from TBP; and 5) increases on consecutive re-extractions of Nb, Zr, or Ru. These and earlier data indicate the formation of extractable Zr or Nb complexes of the  $Zr(NO_3)_4 \cdot nHNO_3 \cdot 2TBP$  type and of an extractable Ru complex,  $RuNO(NO_3)_3$ . Formation of the latter requires the presence of certain nitrogen oxides or nitrous acid, together with  $HNO_3$  or  $NO_3^-$  ions. The increase in  $K_D$  on repeated reextractions of Ru is attributed to the conversion of  $RuNO(NO_3)_3$  in the organic phase to more stable complexes with TBP. Similarly, several stable Zr or Nb complexes are present in both phases. The fact that the establishment of equilibrium between complexes is slow explains

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L 14423-63

ACCESSION NR: AP3003972

the difficulty of Zr or Nb reextraction. However, this difficulty can be overcome by the addition of hydrogen peroxide or oxalic acid to aqueous  $\text{HNO}_3$ , as complexing agents for Nb and Zr, respectively. The data show that in the presence of the complexing agent  $K_2\text{C}_2\text{O}_4$  for Zr and Nb on reextraction is greatly diminished. Thus, it was possible to achieve 74–90% reextraction of Nb or Zr, provided  $[\text{HNO}_3]$  was no higher than 13 N for Nb or 5 N for Zr. Separation of Nb and Zr by extraction under dynamic conditions was carried out in a glass semi-countercurrent 20-stage extractor. Experimental extraction of a mixed  $\text{Zr}^{95}$  and  $\text{Nb}^{95}$  synthetic solution in 10 N  $\text{HNO}_3$  containing 2%  $\text{H}_2\text{O}_2$  produced nearly complete separation, as shown by the radioactivity absorption (transmission) curves of pure  $\text{Zr}^{95}$  and  $\text{Nb}^{95}$ . In another experiment, a nitric acid solution of iron hydroxide precipitate from the actual processing of fission products was extracted with 9.8 N  $\text{HNO}_3$ . Reextraction of Nb with  $\text{HNO}_3$  and  $\text{H}_2\text{O}_2$  was carried out first; then Zr was reextracted with  $\text{HNO}_3$  and oxalic acid. The absorption (transmission) curves for the  $\text{Zr}^{95}$  and  $\text{Nb}^{95}$  products coincided with those for pure  $\text{Zr}^{95}$  and  $\text{Nb}^{95}$ . Separation of  $\text{Ru}^{106}$  from a mixture of long-lived radioactive isotopes by coprecipitation with nickel, copper, lead, or cadmium sulfides is described as a preliminary step to  $\text{Ru}^{106}$  extraction from 0.2 N  $\text{HNO}_3$  solution of the sulfides. The 0.2 N  $\text{NaNO}_2$  was added prior to extraction with  $\text{HNO}_3$ . It was shown that about 98%  $\text{Ru}^{106}$  was extracted from the sulfides. Orig. art. has: 8 figures and 7 tables.

Card

3/143

I 17893-63 EWP(q)/EWT(m)/BDS AFFTC/ASD Pg-4 WH  
 62  
 S/0089/63/015/002/0130/0138  
 ACCESSION NR: AP3005221

AUTHOR: Golovanov, Yu. N.; Brezhneva, N. Ye.; Oziraner, S. N.; Yeremin, A. A.;  
Zotov, V. I.

TITLE: Dependence of the chemical durability and crystallization capacity of  
 glass on composition and manufacturing method

SOURCE: Atomnaya energiya, v. 15, no. 2, 1963, 130-138

TOPIC TAGS: fission product, fission-waste disposal, radioactive-isotope dis-  
 posal, radioactive waste disposal, glass, chemical durability, glass-melting  
 temperature, silicon dioxide content, sodium oxide content, flux, boron trioxide,  
 Beta radiation, glass crystallization, glass annealing, optimum glass composition,  
 radioactive-isotope-containing glass, heavy-metal-containing glass, silicon  
 dioxide, sodium oxide

ABSTRACT: In an attempt to facilitate radioactive-waste disposal a study was made  
 to find chemically durable glasses from hydroxides of radioactive isotopes from  
 spent liquids of the atomic energy industry. The chemical durability must be  
 accompanied by a relatively low glass-melting temperature and heat and radiation  
 resistance, especially if a high heavy-metal content is expected. For this

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L 17893-63

ACCESSION NR: AP3005221

purpose a powdered model composition (powder) consisting of  $\text{Fe}(\text{OH})_3$ ,  $\text{Na}_2\text{U}_2\text{O}_7$ , and  $\text{Ca}(\text{OH})_2$ , with a ratio of  $\text{F}_2\text{O}_3/\text{Na}_2\text{U}_2\text{O}_7/\text{CaO} = 1/2/1$ , was used in certain ratios with glass-forming additives, such as sand and soda, for preparation of a series of specimens, the durability of which was tested by the powder method in neutral ( $\text{H}_2\text{O}$ ), acid (0.1 N  $\text{HCl}$ ), and alkaline (0.1 N  $\text{NaOH}$ ) media. The temperature of the medium was 90C, and the testing time, 2 hr. The optimum melting temperature, time, and powder-to-additive ratio depend on the ability of heavy-metal oxides to form glass with the additives. This ability depends on the viscosity of the melt, which in turn depends on the  $\text{SiO}_2$  and  $\text{Na}_2\text{O}$  content. It was found that a powder-to-additive ratio of 1.85, a melting temperature of 1200C, and melting time of 2 hr were necessary to produce a glass satisfactorily binding heavy metals and, consequently, with good durability. The contents of  $\text{SiO}_2$  and  $\text{Na}_2\text{O}$  in such a glass were 50% and 15%, which was considered an optimum composition. Dropping the melting temperature to 1100C required a longer melting time — up to 6 hr — in order to improve the chemical durability of these glasses. Further experiments were conducted in order to decrease the melting temperature by replacing  $\text{SiO}_2$  with fluxes such as  $\text{B}_2\text{O}_3$  (as boric acid). A decrease of 150C in melting temperature was achieved. Attempts to enhance the chemical durability of the glass by introducing  $\text{Al}_2\text{O}_3$  failed. Thus, the optimum conditions for

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ACCESSION NR: AP3005221

manufacturing the required glass could be summarized as follows: melting temperature, 1050C; melting time, 3-6 hr; ratio of powder to additive, 1.85; and composition of the additive, 77%  $\text{SiO}_2$ , 15.4%  $\text{Na}_2\text{O}$ , and 7.6%  $\text{B}_2\text{O}_3$ . The resulting glass contained 50%  $\text{SiO}_2$ , 10%  $\text{Na}_2\text{O}$ , and 5%  $\text{B}_2\text{O}_3$ . The chemical durability of this glass was compared, through testing with the previously mentioned media, with the durability of glass used for manufacturing chemical-resistant laboratory glassware. The glass obtained was comparable in the neutral, better in the alkaline, and more soluble in the acid medium, which can be explained by the presence of heavy-metal oxides. Study of the effect of annealing temperatures (350-900C) and  $\beta$ -radiation indicated that varying the  $\text{SiO}_2$  content cannot prevent crystallization, which is enhanced by  $\beta$ -radiation. Radiation alone, however, caused no crystallization. The composition of the crystallized phase was found by x-ray diffraction to be  $\text{Na}_2\text{O} \cdot 2\text{CaO} \cdot 3\text{SiO}_2$ . The chemical durability of the crystallized glass is lower in the acid medium than that of the original glass. Irradiation decreases this durability still more because of increased crystallization. Orig. art. has: 10 figures and 6 tables.

Card 3/43

GOLOVANOV, Yu.N.; BREZHNEVA, N.Ye.; OZIRANER, S.N.; YEREMIN, A.A.; ZOTOV, V.L.

Mechanism underlying high-temperature volatilization of ruthenium  
coprecipitated with various substances. Atom. energ. 15 no.3:  
219-223 S '63. (MIRA 16:10)

(Ruthenium) (Evaporation)

GOLOVANOV, Yu.N.; BREZHNEVA, N.Ye.; OZIRANER, S.N.; YEREMIN, A.A.;  
ZOTOV, V.L. .

Mechanism underlying the volatilization of cesium coprecipitated  
with double nickel and potassium ferricyanide at high temperatures.  
Atom. energ. 15 no.3:261-262 S '63. (MIRA 16:10)

(Ferrocyanides) (Cesium)

BREZHNEVA, N. Ye.; KORPUSOV, G. V.; PATRUSHEVA, Ye. N.; PROKHOROVA, N. P.; KRYLOV, Yu.S.

"Extraction of radioactive fission elements."

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva,  
31 Aug-9 Sep 64.

BREZHNEVA, N.Ye.; LEVIN, V.I.; KORPUSOV, G.V.; MAN'KO, N.M.; PLOTNOV,  
G.F.

Isolation of radioactive carrier-free cerium from a mixture  
of fission products. Raidokhimiia 6 no. 1:66-72 '64.  
(MIRA 17:6)



BREZHNEVA, N.Ye.; LEVIN, V.I.; KORFUSOV, G.V.; PATRUSHEVA, Ye.N.;  
MAN'KO, N.M.; KHORESHKO, L.T.

Separation of promethium-147 and europium-155 from a mixture  
of fission products by tributyl phosphate extraction. Radiokhimiia  
6 no.3:265-276 '64. (MIRA 18:3)

PATRUSHEVA, Ye.N.; BREZHNEVA, N.Ye.; KORPUSOV, G.V.

Regularities in the distribution of europium between nitric  
acid solutions and some organophosphorus compounds. Radiokhimiya  
6 no.3:276-280 '64. (MIRA 18:3)

LEVIN, V.I.; BREZHNEVA, N.Ye.; RATNIKOVA, M.G.

Preparation of samples and self-absorption correction in measuring the activity of soft beta-emitters. Radiokhimiia 7 no.3:346-350 '65.

(MIRA 18:7)

*BREZHNEVA, N.Ye. - MBR, State Physical Chemistry Institute  
Lab. of Chemical Radioactive Elements - 67*

BREZHNEVA, Ye.S. (Moskva)

Electroencephalographic data on functional changes of the cerebral cortex in hypertension. Klin.med. 32 no.9:52-57 S '54. (MLRA 7:12)  
(HYPERTENSION, physiology,

EEG)

(ELECTROENCEPHALOGRAPHY, in various diseases,  
hypertension)

KURILENKO, I.S., polkovnik meditsinskoy sluzhby, kand.med.nauk; BREZHNEVA,  
Ye.S., podpolkovnik meditsinskoy sluzhby

Some clinical forms of cerebral rheumatism. Voen.-med.zhur. no.4:  
42-45 Ap '60. (MIRA 14:1)  
(RHEUMATIC FEVER) (BRAIN—DISEASES)

*BREZHNEVA, Z.A.*  
KULAKOVA, L.A.; KORENCHEVSKIY, K.I.; OL'SHEVSKAYA, N.S.; FARBER, A.M.;  
POPOVA, M.V.; BREZHNEVA, Z.A.; MASSAROVA, K.A., red.; BYKOVA, G.N.,  
tekhn.red.

[Economy of Archangel Province; a statistical manual] Narodnoe  
khoziaistvo Arkhangel'skoi oblasti; statisticheskii sbornik.  
[Arkhangel'sk] Arkhangel'skoe knizhnoe izd-vo, 1957. 146 p.  
(MIRA 11:3)

1. Archangel (Province). Statisticheskoye upravleniye.
2. Statisticheskoye upravleniye Arkhangel'skoy oblasti (for Kulakova,  
Korenchevskiy, Ol'shevskaya, Farber, Popova, Breznneva). 3. Nachal'-  
nik Statisticheskogo upravleniya Arkhangel'skoy oblasti (for  
Massarova)  
(Archangel Province--Statistics)

JAGER, M.; CERNACEK, J.; BREZIANSKY, I.

Residual sequelae after brain concussion without loss of  
consciousness. Bratisl. lek listy 44 no.6:361-365 '64.

1. Neurologická klinika Lek. fak. Univ. Komenského v Bratislave  
(veduci prof. MUDr. J. Cernacek, DrSc.).

BREZICKA, I.

July yesterday and July today. p. 3. (Rolnik Spoldzielca, Vol. 9, No. 30,  
July 1956, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 8, Aug 1957. Uncl.



ZAVREL, J., inz.; BREZIK, J.

Suspension wall panels for multistoried buildings. Poz stavby  
II no.1:32-35 '63.

1. Prumyslove stavby, Gottwaldov.

BREZIK, Zdenek

Melangere errors. Cas. lek. cesk. 94 no.24:662-664 10 June 55.

1. (Ustav hygieny prace a chorob z povolani, Praha).  
(LEUKOCYTE COUNT, determination  
melangere errors)

COUNTRY : Czechoslovakia  
 CATEGORY : Organic Chemistry--Synthetic organic chemistry G-2  
 ABS. JOUR. : AZKhim., No. 16 1959, No. 57159  
 AUTHOR : Novotny, A., Brezik, Z., Pridal, J., and \*  
 INST. : Not given  
 TITLE : On the Application of 1,3,4-Oxadiazoles in the  
 Chemotherapy of Tuberculosis  
 ORIG. PUB. : Ceskoslov Farmac, 7, No 9, 517-520 (1958)  
 ABSTRACT : The authors have synthesized 2-(pyridyl-4)-4,5-  
 dihydro-1,3,4-oxadiazolone-5 (I) and 2-cyano-  
 methyl-4,5-dihydro-1,3,4-oxadiazolone-5 (II)  
 as well as 2-R-5-(4-pyridyl)-1,3,4-oxadiazoles  
 with R = H (IIIa), CH<sub>3</sub> (IIIb), and C<sub>2</sub>H<sub>5</sub> (IIIc)  
 and have investigated the antitubercular prop-  
 erties of the above compounds. I and II are  
 prepared by condensing isonicotinic acid hydra-  
 zide (IV) and NCCH<sub>2</sub>CONHNH<sub>2</sub> (V) ('reazid') with  
 COCl<sub>2</sub>. IIIb and IIIc are obtained in small  
 GARD: 1/9 \*Kalfus, K.

COUNTRY	: Czechoslovakia	G-2
CATEGORY	:	
ABS. JOUR.	: RZhKhim., No. 16 1959, No.	47159
AUTHOR	:	
INST.	:	
TITLE	:	
ORIG. PUB.	:	
ABSTRACT	<p>yields by the dehydration of the corresponding N-isonicotinyl-N'-acylhydrazines with <math>P_2O_5</math>, <math>POCl_3</math>, and, in the case of IIb, by azeotropic dehydration at temperatures below <math>270^\circ</math> (decomp) in aromatic ethers, nerolin or, preferably, <math>(C_6H_5)_2O</math>. The application of <math>SOCl_2</math>, <math>COCl_2</math>, or 5% oleum gives inferior results. IIIa could be prepared only by the method described (RZhKhim, No 7, 1956, 19295), yield 80%, mp <math>120-121^\circ</math> (from alc). For the preparation of the above-indicated</p>	
CARD:	2/9	

136

COUNTRY : Czechoslovakia  
CATEGORY : G-2  
ABS. JOUR. : RZKhim., No. 16 1959, No. 57159  
AUTHOR :  
INST. :  
TITLE :  
ORIG. PUB. :  
ABSTRACT : diacylhydrazines the authors have developed a procedure based on the acylation of IV by carboxylic acid anhydrides in water which excludes polyacylation and the production of colored impurities; a procedure has also been developed for the formylation of IV and V by 66-80% HCOOH. The antitubercular activity of I in vivo is equal to that of IV, and II is equivalent to V. The activity of III in vitro is small; the in vivo tests are still in process. 0.6 mol COCl<sub>2</sub>

CARD: 3/9

COUNTRY	: Czechoslovakia	
CATEGORY	:	G-2
ABS. JOUR.	: RZKhm., No. 16 1959, No.	57159
AUTHOR	:	
INST.	:	
TITLE	:	
ORIG. PUB.	:	
ABSTRACT	: is passed through (0-5°, 75 min) a solution of 0.1 mol IV in 100 ml water at $\text{pH} \leq 6$ , the mixture is neutralized to pH 5.5-6 with 50% KOH, and filtered; the yield of I is 90%, mp 275.9-276.1° (from water or from 4 : 1 C <sub>2</sub> H <sub>5</sub> N-ethyl acetate). II is prepared by an analogous procedure, yield 88%, mp 162.2-162.3° (from alc). 0.1 mol IV is mixed with 0.6 mol 80% HCOOH and the mixture is evaporated under vacuum after 8 hrs to give N-formyl-N'-isonicotinylhydrazine,	

CARD: 4/9

COUNTRY	:	Czechoslovakia	
CATEGORY	:		G-2
ABS. JOUR.	:	AZKhim., No. 16	1959, No. 57159
AUTHOR	:		
INST.	:		
TITLE	:		
ORIG. PUB.	:		
ABSTRACT	:	<p>yield 83%, mp 141.2-141.7° (from butyl acetate).  A mixture of 0.05 mol V and 0.2 mol 80% HCOOH  is treated with 12 ml alcohol and left to stand  15 hrs at 4°; N-formyl-N'-cyanoacetylhydrazine  is obtained, yield 68.5%, mp 153.2-153.8° (from  alc). 0.1 mol IV is treated without cooling  with 18 ml water and 0.125 mol (CH<sub>3</sub>CO)<sub>2</sub>O, the  solution is evaporated at 90-95°/10 mm, and N-  acetyl-N'-isonicotinyldiazine (VI) is iso-  lated, yield 91%, mp 162.2-162.5° (from butyl</p>	

CARD: 5/9

COUNTRY	: Czechoslovakia	
CATEGORY	:	G-2
ABS. JOUR.	: RZKhim., No. 16 1959, No.	57159
AUTHOR	:	
INST.	:	
TITLE	:	
ORIG. PUB.	:	
ABSTRACT	: acetate). By a similar procedure, N-propionyl-N'-isonicotinylhydrazine (VII) is obtained from IV and $(C_2H_5CO)_2O$ , yield 91%, mp 130.2-130.4°, and N-butyryl-N'-isonicotinylhydrazine (VIII) is prepared from IV and $(n-C_3H_7CO)_2O$ , yield 90-91%, mp 140.1-140.3° (from 2 : 1 ethyl acetate- $C_2H_5N$ ). 0.03 mol VI is ground with 0.035 mol $P_2O_5$ with careful heating (100-130°), the mixture is dissolved in 100 ml water and soda is added to pH 8-9, after which the solution is	
CARD: 6/9		
/38		



COUNTRY	:	Czechoslovakia	
CATEGORY	:		G-2
ABS. JOUR.	:	RZKhim., No. 16	1959, No. 57159
AUTHOR	:		
INST.	:		
TITLE	:		
ORIG. PUB.	:		
ABSTRACT	:	<p>evaporated to dryness (90-95°/10 mm), the residue is extracted with pyridine in a Soxhlet apparatus, and the extract is cooled (4°, 15 hrs) to give IIIb, yield 26%, mp 150.5-151° (from alc). 0.03 mol VI is refluxed with 0.055 mol POCl<sub>3</sub> in 50 ml C<sub>6</sub>H<sub>6</sub> for 105 min, the C<sub>6</sub>H<sub>6</sub> is distilled off, and the residue is treated as in the preceding case; the pyridine extract, evaporated to 15-20 ml, is refluxed for 30 min with 50 ml alcohol (in the presence of charcoal) to</p>	

CARD: 7/9

COUNTRY : Czechoslovakia  
 CATEGORY :  
 ABS. JOUR. : RZKhim., No. 16 1959, No. G-2  
 AUTHOR : 57159  
 INST. :  
 TITLE :  
 ORIG. PUB. :  
 ABSTRACT : give IIIb, yield 23.4%. IIIc is prepared from VII by a similar procedure, yield 36% (with  $P_2O_5$ ), 29% (with  $POCl_3$ ), mp 58-58.5° (from alc). 0.25 mol VI is refluxed for 170 min with 9.0 ml  $(C_6H_5)_2O$  (0.65 ml water is distilled off), the cooled mixture is poured into 50 ml water, shaken, and extracted with ether, the aqueous layer is evaporated to dryness and the residue is extracted with 10 ml boiling  $C_6H_6$  to give IIIb, 15-20% (pure); the  $C_6H_6$  insoluble residue is an unidenti-

CARD: 8/9

170

COUNTRY : Czechoslovakia  
CATEGORY : G-2  
ABS. JOUR. : RZhkhim., No. 16 1959, No. 57159  
AUTHOR :  
INST. :  
TITLE :  
ORIG. PUB. :  
ABSTRACT : fied substance with mp 263-264° (from alc). III  
with R = n-C<sub>6</sub>H<sub>5</sub>, could not be prepared by the  
dehydration of VIII with POCl<sub>3</sub>. All mp's are  
corrected.  
A. Tochilkin

CARD: 9/9

MULLER, J.; BREZIK, Z.; BREZIKOVA, D.

On the inability of rabbit properdin to inactivate the third component of guinea pig complement. Cesk. fysiол. 9 no.4:381-382 JI '60.

1. Ustav hygieny prace a chorob z povolani, Praha.  
(COMPLEMENT)  
(PROPERDIN)

MULLER, J.; BREZIK, Z.; BREZIKOVA, D.

On the inability of rabbit properdin to inactivate the third component of guinea pig complement. Cesk. fysiolo. 9 no.4:381-382 JI '60.

1. Ustav hygieny prace a chorob z povolani, Praha.  
(COMPLEMENT)  
(PROPERDIN)

CZECHOSLOVAKIA

ZDRAZIL, J., and PICHA, F., with technical cooperation of BREZIL-KOVA, Z., Department of Work Hygiene (Oddeleni hygieny prace), CHES [Okresni hygienicko-epidemiologicka stanice; Okres Public Health and Epidemiology Station], Gottwaldov.

"Cancerogenous Substances - 3,4-Benzpyrene - in Molding Sand Mixtures and Foundry Dust"

Prague, Pracovni Lekarstvi, Vol XV, No 5, June 63, pp 207-211.

Abstract [Authors' English summary, modified]: The hazard was assessed according to the 3,4-benzpyrene content in the atmosphere. Polycyclic hydrocarbons are formed in foundries as a result of incomplete combustion of inorganic substances contained in molding mixtures. An increased hazard was found in the shop where molding mixtures were prepared. Dust from such shops contains as much as 4.64 milligrams of 3,4-benzpyrene per kilogram. An admixture of coal pitch increased the hazard substantially in comparison to dry casting. This was the reason why the use of coal pitch in foundries was prohibited. Four references, including 3 Czech.

I 33522-66

ACC NR AF6023454

SOURCE CODE: CZ/0082/66/000/002/0081/0088

AUTHOR: Hanzal, F.; Brezina, M.; Prochazkova, Z.

ORG: Neurological Clinic, Faculty of General Medicine, KU /headed by Academician K. Henner/, Prague (Neurologicka klinika fakulty vseobecneho lekarstvi KU); J. Heyrovsky Polarographic Institute, CSAV /headed by Academician R. Brdicka/, Prague (Polarograficky ustav J. Heyrovského CSAV)

TITLE: Polarographic examination of cerebrospinal fluid proteins

SOURCE: Ceskoslovenska neurologie, no. 2, 1966, 81-88

TOPIC TAGS: protein, central nervous system, polarographic analysis, nervous system disease, diagnostic medicine

ABSTRACT: In the majority of pathological cases the fluid proteins, when compared to those of healthy subjects, show increased polarographic activity either spontaneously or after alkali denaturing. The maximum spontaneous polarographic activity is found in acute inflammatory diseases. Application of polarographic methods in the investigation of nervous diseases is discussed. A. Kostrunkova participated in the technical work. Orig. art. has: 1 figure and 1 table. [Based on authors' Eng. abst.] /JPRS/

SUB CODE: 06 / SUBM DATE: 04Jun65 / ORIG REF: 010 / OTH REF: 004

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~~BRANISLAV~~, BREZINA, B.

CZECHOSLOVAKIA/Analysis of Inorganic Substances

G-2

Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19661

Author : Jozef Staron, Branislav Brezina

Inst : -

Title : Rapid Analysis of Magnesite

Orig Pub: Rudy, 1956, 4, No 8, 252 - 254.

Abstract: A new rapid method of magnesite analysis is described. This method requires much less time than the methods used previously (125 min. instead of 26 hours). A weighed sample of magnesite of 1 g is dissolved in 30 ml of concentrated HCl and evaporated until it is dry at 120°. The remainder is dissolved in 10 ml of concentrated HCl, 50 to 70 ml of hot water are added and all is

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CZECHOSLOVAKIA/Analysis of Inorganic Substances

G-2

Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19661

filtered (determination of  $\text{SiO}_2$ ), the filtrate is diluted to 250 ml. 2 ml of concentrated  $\text{HNO}_3$  and 0.5 g of  $\text{NH}_4\text{Cl}$  are added to 100 ml of the filtrate and it is neutralized with  $\text{NH}_4\text{OH}$  until  $\text{R}_2\text{O}_3$  precipitates. The precipitate is dissolved adding several drops of  $\text{HCl}$  and the solution is titrated with 0.01 n l-ascorbic acid until discoloration at 40 to 50°. 1 ml of 0.01 l-ascorbic acid is equivalent to 0.7984 mg of  $\text{Fe}_2\text{O}_3$ . The total amount of  $\text{R}_2\text{O}_3$  is determined in the titrated solution after having oxidized  $\text{Fe}^{2+}$  to  $\text{Fe}^{3+}$  by neutralizing  $\text{NH}_4\text{OH}$  with  $\text{HNO}_3$ .  $\text{Al}_2\text{O}_3$  is determined from the difference.  $\text{CaO}$  is determined by the flame photometric method; a mixture of  $\text{C}_2\text{H}_2$

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*BREZINA, B.*

CZECHOSLOVAKIA / Physical Chemistry. Kinetics. Combustion. Explosions. Topochemistry. Catalysis.

B

Abs Jour: Ref Zhur-Khimiya, No 11, 1958, 35468

Author : Brezina Bohuslav

Inst : Not given

Title : Study of a Reaction Taking Place in Equimolecular Barium Carbonate Mixtures with Various Titanium Dioxide Modifications.

Orig Pub: Chem listy, 1957, 51, No 8, 1397-1421

Abstract: The mechanism of the formation of  $\text{BaTiO}_3$  (I), on the annealing of the mixture  $\text{BaCO}_3$  (II) with one of the  $\text{TiO}_2$  (III) modifications, has been studied by the X-ray diffraction, volumetric, gravimetric

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CZECHOSLOVAKIA / Physical Chemistry. Kinetics. Combustion. Explosions. Topochemistry. Catalysis.

B

Abs Jour: Ref Zhur-Khimiya, No 11, 1958, 35468

Abstract: and chemical-analytical methods. III modification: anatase, rutile obtained through the annealing of  $(\text{FeTiO}_3)$  with  $\text{H}_2\text{SO}_4$  to  $1100^\circ \text{C}$  during eight hours in an oxidizing atmosphere, or rutile obtained through a  $\text{TiCl}_4$  hydrolysis. Four reaction stages have been noted. First stage - improvement of the initial component structure, upset by the break-up of the reaction mixture in the aqueous medium, and the beginning of the decomposition of II at 300 to  $400^\circ \text{C}$ . Second stage - diffusion into the crystal lattice, maximum formation of the hypothetical binary compound II-III. Third stage - imperfect crystallization period, maximum dissociation of II and rapid formation of the new crystal phase I at

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CZECHOSLOVAKIA / Physical Chemistry. Kinetics. Combustion. Explosions. Topochemistry. Catalysis. . B

Abs Jour: Ref Zhur-Khimiya, No 11, 1958, 35468

Abstract: 600 to 900° C. Final stage - compensation of shortcomings and recrystallization, improvement of the crystal lattice I. At this stage, at a temperature of 1000 to 1350° C, the following is noted: decrease in density, increase in the contents of free BaO, increase in the H<sub>2</sub>O vapor sorption, decline of the lattice perfection, volume modification. According to the author, it is so far impossible to define well the mechanism of the investigated reaction.

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